VZ730 - 1

Louisiana Energy Indicators

Center for Energy Studies

Louisiana State University **Fall 1989**

ENERGY ISSUES FOR LOUISIANA IN THE 1990'S

Allan G. Pulsipher, Ph.D.
Director, Policy Analysis
Center for Energy Studies

In 1970 energy strategists had two main concerns. Having recognized that the World would become increasingly dependent on Arab oil, their first worry was how to keep oil production in the mideast growing rapidly enough to fuel what they assumed to be an inexorable increase in the World's appetite for energy. The bottom line for energy policy was to increase the output of oil from the Mideast without a major price increase and to ensure political stability in the region. Their second concern was whether enough uranium could be found to fuel the thousand or more nuclear reactors which would be needed before the new breeder reactor was available in the late 1990's.

Well before the decade reached middle age, friendly governments were replaced by governments that routinely referred to the United States as satanic, cartels coalesced and embargoes were attempted, shortages were created and exacerbated, and prices rose and fell with rollercoaster rapidity.

In response; world oil production stagnated, with production in 1989 almost six percent below 1979 levels and OPEC production almost thirty percent lower; energy conservation was invented and flourished; and super tankers, which had sprouted like dandelions, became white elephants before they could be launched. In the United States nuclear power plants were cancelled rather than built, uranium prices plummeted, and the breeder program was abandoned. Today it is expected that less than one hundred nuclear reactors will be in operation at the turn of the century.

With this humbling prologue about the prescience of energy analysts, what are some of the fundamental energy trends expected in the coming decade and what are their implications for Louisianans?

Trend one: A workable equilibrium in world energy markets will result in only slowly rising oil and gas prices and relatively stable production: But the U.S. and most of the rest of the World will become increasing dependent on imports from the Mideast.

According to the Oil and Gas Journal's latest survey of industry forecasters, oil prices measured in inflation corrected 1989 dollars are not expected to exceed $20 per barrel until 1995, nor to get much beyond that level through the end of the century--an increase of only about twenty-five per cent or so over the decade. Gas prices are expected to rise more rapidly, reaching $2.50/mcf by 1995 and almost $3.00/mcf by the year 2000, roughly a fifty percent increase. With both domestic U.S. and non-OPEC oil production expected to decline over the decade, while demand continues to grow, the OPEC share of both world and U.S. markets will expand.

The prediction that prices will remain atypically stable at this level rests on the belief that the giant OPEC swing producers (those countries with large reserves and the ability to increase their production capacity) believe that significantly higher prices would choke off the only recently resurrected demand for oil while encouraging "too much" exploration and production from non-OPEC sources. Similarly, significantly lower prices would create so much pressure to compete for market share that prices would tumble once again to the $10 or $12 per barrel level.

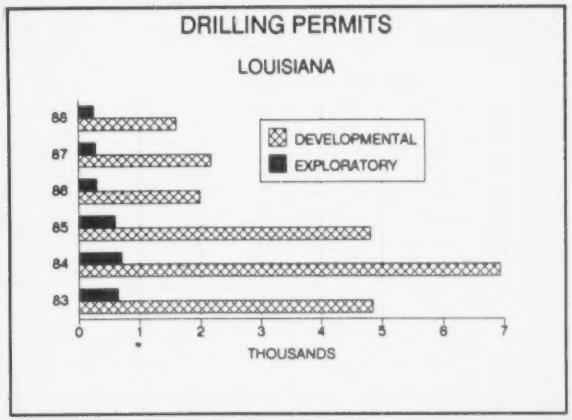
Although a part of the projected rise in gas prices reflects a catch-up from the decade-long gas "bubble" of the 1980's, the end of the bubble and stability of the projected price path obviously would provide welcome relief to Louisiana gas developers and producers. It would also reduce the risks they have to bear and encourage a more sensible and efficient development of the States' reserves.

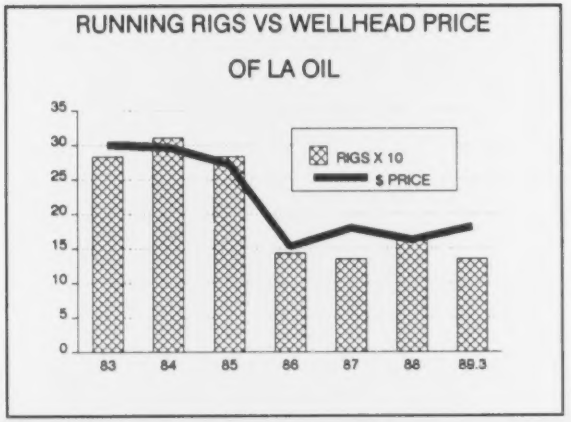
This is particularly important since smaller, independent producers--who are less able and willing to assume the risks market volatility creates--are expected to be doing progressively more of the development of the State's petroleum reserves. A resurgence of exploration and development also is important because many of the principal fields developed in response to the high prices in the early 1980's will begin to play out in the mid-1990's.

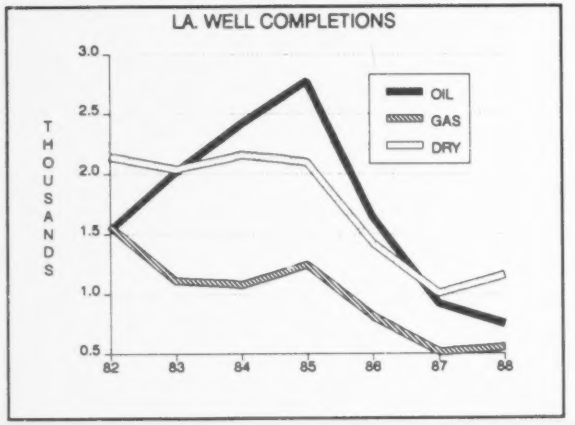
An equilibrium in World energy markets would also provide a more stable planning basis for the oil- and gas-

Continued on back page

Drilling







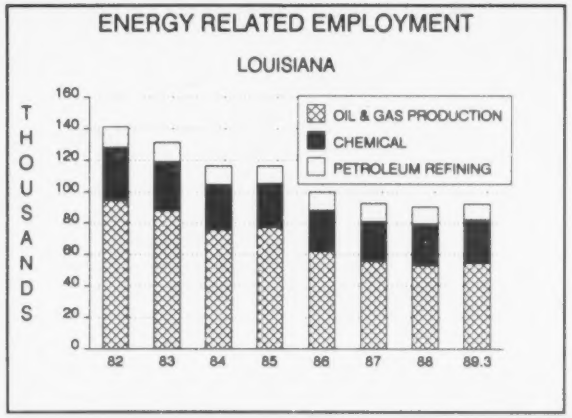
Figures represent TOTAL
except when otherwise noted

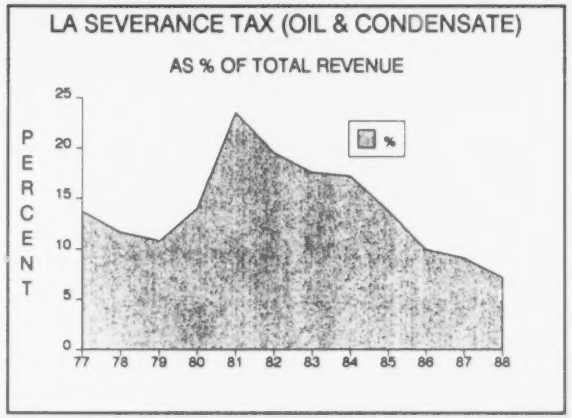
Totals may not add due to rounding

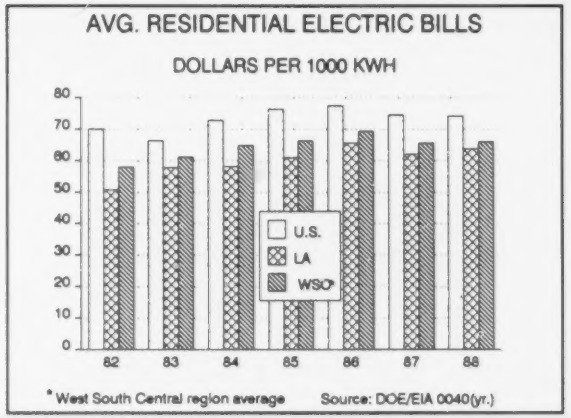
Indicator	1984	1985	1986	1987	1988	88.4	89.1	89.2	Jul	Aug	Sep	Year to Date Through Last Month Reported Sept 1988	Year to Date Through Last Month Reported Sept 1989	% Change
DEVELOPMENTAL WELLS - LA*														
(As Reported)														
Oil	2361	2712	1604	901	736	149	179	142	31	51	68	587	471	-19.8%
Gas	992	1145	768	462	518	110	201	188	41	63	87	408	580	42.2%
Dry	1453	1433	1000	666	783	160	219	137	35	54	57	623	502	-19.4%
Total	4806	5290	3372	2029	2037	419	599	467	107	168	212	1618	1553	-4.0%
WELL COMPLETIONS - LA*														
(As Reported)														
North	3667	4038	2209	1106	1018	267	229	188	34	63	88	751	602	-19.8%
South	1248	1325	1036	740	689	132	158	117	38	27	46	557	386	-30.7%
Offshore	736	754	628	598	759	103	336	232	54	113	125	656	860	31.1%
Total	5671	6117	3873	2444	2466	502	723	537	126	203	259	1964	1848	-5.9%
WELL COMPLETION SUCCESS RATIO														
(As Reported)														
North	0.681	0.705	0.621	0.646	0.576	0.587	0.697	0.542	0.471	0.444	0.409	0.573	0.560	-2.3%
South	0.472	0.528	0.517	0.587	0.525	0.533	0.488	0.465	0.500	0.407	0.500	0.522	0.474	-9.2%
Offshore	0.575	0.581	0.562	0.509	0.427	0.332	0.425	0.729	0.722	0.752	0.872	0.459	0.646	40.7%
Total	0.618	0.651	0.589	0.591	0.526	0.532	0.540	0.621	0.587	0.611	0.649	0.524	0.592	13.0%
RUNNING RIGS (Avg. Hughes Tool)														
North	30	25	12	12	14	16	13	16	9	21	17	13	15	15.4%
South	147	129	63	59	62	54	50	53	47	47	48	65	50	-23.1%
Offshore (Includes Fed. OCS)	132	129	69	65	88	86	69	64	81	77	70	88	70	-20.5%
Total	309	283	144	136	164	156	132	133	137	145	135	166	135	-18.7%
DRILLING PERMITS ISSUED														
Exploratory	702	599	298	283	249	60	37	58	15	26	20	189	156	-17.5%
Developmental	6929	4811	1983	2169	1601	315	261	379	106	173	130	1286	1049	-18.4%
Total	7631	5410	2281	2452	1850	375	298	437	121	199	150	1475	1205	-18.3%

*Source: Petroleum Information Corporation. CES maintains additional data in the Indicators Database.

Employment, Prices & Revenues





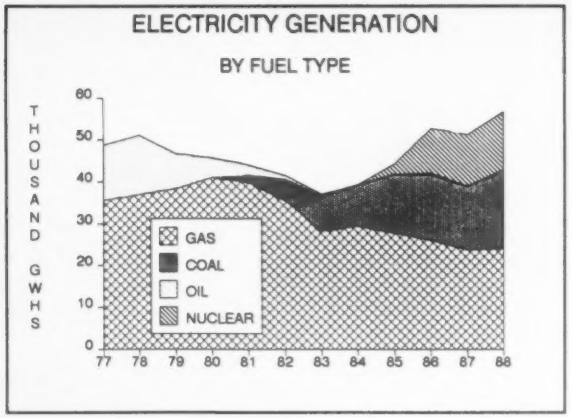


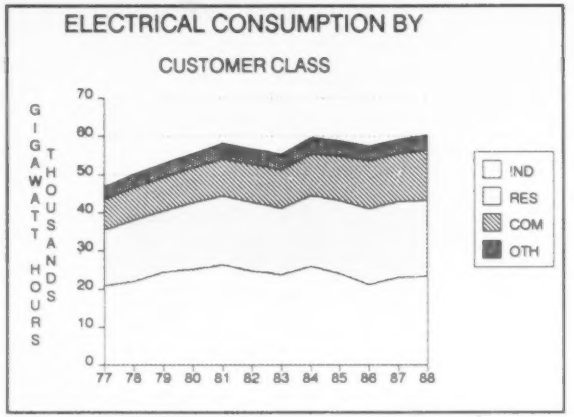
Figures represent TOTAL except when otherwise noted

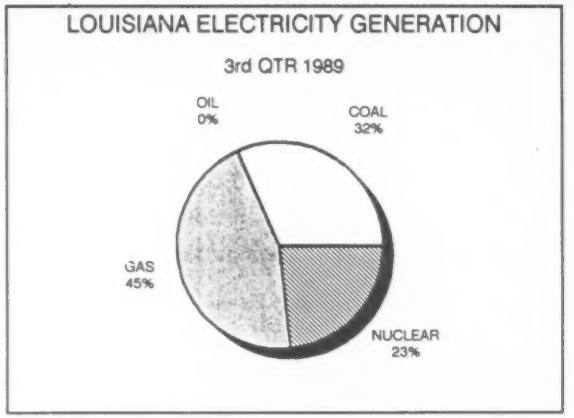
Totals may not add due to rounding

Indicator	1984	1985	1986	1987	1988	88.4	89.1	89.2	Jul	Aug	Sep	Year to Date Through Last Month Reported Sept 1988	Year to Date Through Last Month Reported Sept 1989	% Change
EMPLOYMENT (Thousands) - Avg.														
Oil & Gas Extraction (SIC13)	75.6	77.1	61.9	55.8	53.1	54.2	54.4	54.4	54.6	54.6	54.4	54.0	54.4	0.7%
Chemicals & Allied Products (SIC28)	28.9	28.0	26.1	25.2	26.4	27.0	27.3	27.5	27.4	28.0	27.9	26.7	27.6	3.4%
Petroleum Refining (SIC29)	11.6	11.1	11.5	11.6	10.8	10.2	10.2	10.2	10.3	10.3	10.2	10.4	10.2	-1.9%
Total La. Employment	1751.9	1744.2	1727.3	1728.7	1718.4	1710.7	1675.5	1732.3	1773.6	1749.5	1772.2	1712.4	1724.3	0.7%
OIL PRICES ($/BBL) - Avg.														
LA Wellhead	29.67	27.22	15.29	17.98	15.18	12.95	17.20	19.19	18.81	17.27	18.15	15.72	18.16	15.5%
US Wellhead	25.88	24.09	12.45	15.42	12.55	10.96	14.55	16.72	16.32	15.01	15.57	13.08	15.63	19.5%
ELEC. PRICES (Cents/KWH) - Avg. Residential														
CLECO	7.6	7.3	6.6	6.8	6.6	6.6	6.4	6.9	6.8	6.8	6.9	6.6	6.7	1.5%
GSU	6.1	7.6	6.7	6.8	6.9	6.9	6.9	7.6	7.6	8.0	7.8	6.9	7.5	8.7%
LP&L	6.1	5.9	6.7	7.0	7.1	7.3	7.1	7.1	7.3	7.3	7.4	7.1	7.2	1.4%
NOPSI	6.3	5.9	6.2	6.3	6.9	7.1	6.9	7.4	7.9	7.5	7.4	6.8	7.3	7.4%
SWEPCO	6.0	6.6	6.7	6.6	6.7	6.6	6.4	6.9	6.9	6.9	6.9	6.8	6.7	-1.5%
PRINCIPAL ENERGY RELATED REVENUES (Millions $)														
Sev. - Oil & Condensate	653.5	598.3	390.3	345.6	300.0	57.3	80.3	78.3	30.3	27.7	24.2	242.8	240.7	-0.9%
Sev. - Natural Gas	131.3	121.1	126.1	112.7	106.4	25.2	31.9	26.7	9.3	8.7	9.0	81.1	85.6	5.5%
Bonuses	68.0	32.1	15.9	25.5	17.7	4.8	2.2	4.3	0.8	1.0	0.7	12.9	8.9	-31.0%
Rentals	21.2	20.9	12.3	6.7	9.3	2.7	1.9	1.6	0.3	0.5	2.1	6.6	6.4	-3.0%
Royalties	436.1	379.1	304.5	253.8	243.2	60.4	52.2	59.2	18.3	69.2	20.8	182.8	219.8	20.2%
Special Fuels Tax	41.1	52.3	57.6	55.2	58.0	14.9	13.8	14.8	5.8	4.9	4.7	43.2	44.0	1.9%
Gasoline Tax	227.7	286.2	289.5	311.6	314.7	75.6	76.0	80.2	27.1	26.9	25.2	239.1	235.4	-1.5%
Nat. Gas Franchise Tax	11.7	11.0	10.9	9.3	9.7	2.3	2.4	2.5	0.1	2.1	0.1	7.4	7.1	-4.1%
Total Energy Revenues	1592.6	1502.9	1211.6	1126.4	1062.6	244.0	261.8	268.6	92.6	141.3	86.8	818.8	851.0	3.9%
TOTAL STATE REVENUES (Millions $)	3785.2	4335.6	3913.2	3783.6	4181.8	1042.3	983.4	1312.0	364.9	351.5	387.2	3139.5	3399.0	8.3%
ENERGY RELATED REVENUES AS % OF STATE TOTAL	42.1	34.7	31.0	29.8	25.4	23.4	26.6	20.5	25.4	40.2	22.4	26.1	25.0	-4.0%

Historical Presentation - Electricity







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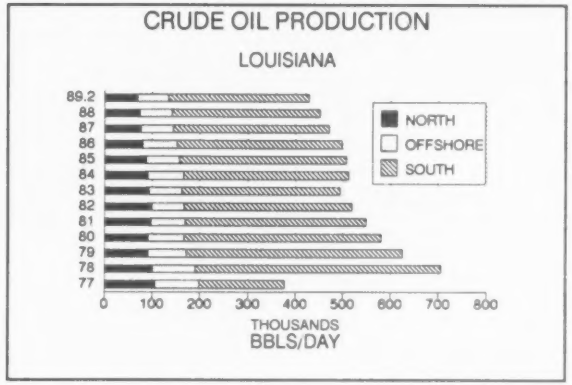
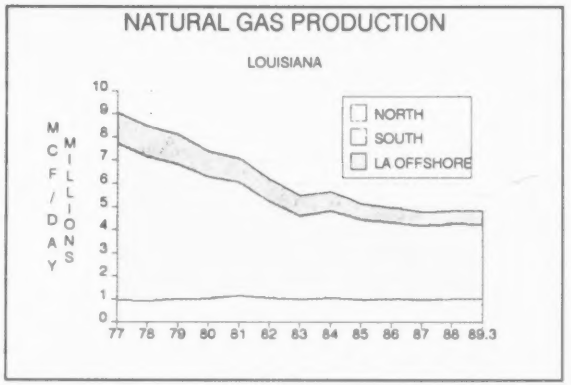
Indicator	83.4	84.1	84.2	84.3	84.4	85.1	85.2	85.3	85.4	86.1	86.2	86.3
ELECTRICITY GENERATION BY FUEL TYPE (GWH)*												
Gas	6463	6092	7541	8963	6764	6067	8315	8278	5075	4393	6834	8688
Coal	2421	2225	2510	2901	2194	3399	3168	4005	3396	3555	2811	4467
Oil	300	83	12	13	32	55	7	23	15	8	13	389
Nuclear Power	0	0	0	0	0	0	407	340	1711	1825	3215	3388
Total	9184	8400	10063	11877	8990	9521	11897	12646	10197	9781	12873	16932
ELECTRICITY CONSUMPTION BY CUSTOMER CLASS (GWH)*												
Residential	3863	4220	3878	6261	4191	4116	4306	6661	4093	4107	4455	7192
Commercial	2493	2437	2587	3191	2726	2566	2842	3378	2790	2781	3095	3742
Industrial	6231	6327	6633	6592	6348	5919	6213	6101	5834	5400	5694	5739
Other	941	1010	1082	1147	1008	933	1009	1105	946	891	987	1054
Total	13528	13994	14180	17191	14273	13534	14370	17245	13663	13179	14231	17727

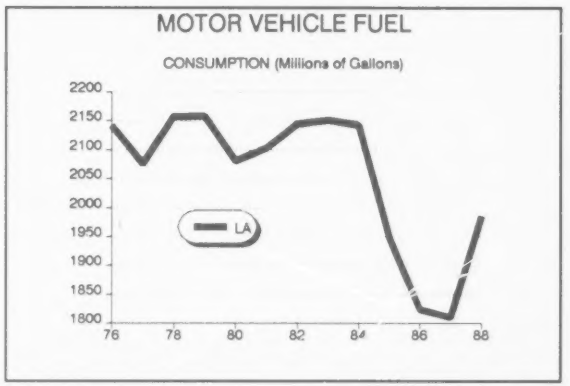
Indicator	86.4	87.1	87.2	87.3	87.4	88.1	88.2	88.3	88.4	89.1	89.2	89.3
ELECTRICITY GENERATION BY FUEL TYPE (GWH)*												
Gas	6120	4132	5589	8104	5998	5110	6258	8759	4159	3636	6238	7353
Coal	4754	3178	3052	4327	4544	4565	4670	4903	4291	4299	4968	5171
Oil	9	28	10	8	14	149	9	67	44	29	16	16
Nuclear Power	2210	2981	3795	3422	2126	3963	2591	3924	3310	3373	2429	3799
Total	13093	10319	12446	15861	12682	13787	13528	17653	11803	11373	13651	16339
ELECTRICITY CONSUMPTION BY CUSTOMER CLASS (GWH)*												
Residential	4111	4171	4640	7106	3885	4319	4379	6977	4241	4191	4816	7021
Commercial	2915	2761	3143	3799	2947	2870	3128	3898	3166	2947	3338	3884
Industrial	4369	5437	5640	6026	5961	5716	5808	5914	6029	6039	6144	6366
Other	967	925	981	954	750	704	756	858	1542	716	834	913
Total	12362	13294	14404	17885	13543	13609	14071	17647	14978	13893	15132	18184

*1 GWH = 1 MILLION KWH

Production & Consumption







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Indicator	1984	1985	1986	1987	1988	88.4	89.1	89.2	Jul	Aug	Sep	Year to Date Through Last Month Reported Sept 1988	Year to Date Through Last Month Reported Sept 1989	% Change
CRUDE OIL PRODUCTION - Lease Condensate Included (Avg. MBBLS/day)														
North	90.7	87.6	80.5	76.7	73.7	72.4	69.6	69.1	NA*	NA*	NA*	74.0	NA*	--
South	348.0	350.2	345.9	328.0	311.0	304.9	299.0	295.7	NA*	NA*	NA*	313.1	NA*	--
Offshore	74.2	70.0	71.4	66.6	67.2	65.3	63.2	64.5	NA*	NA*	NA*	67.8	NA*	--
Total	512.9	507.8	497.8	471.3	451.9	442.6	431.8	429.3	NA*	NA*	NA*	454.9	NA*	--
NATURAL GAS PRODUCTION - Casinghead Included (Avg. BCF/day)														
North	1.05	0.96	0.99	0.98	1.02	1.04	1.07	1.06	NA*	NA*	NA*	1.02	NA*	--
South	3.76	3.48	3.30	3.20	3.23	3.29	3.24	3.22	NA*	NA*	NA*	3.20	NA*	--
Offshore	0.83	0.70	0.68	0.62	0.59	0.55	0.53	0.55	NA*	NA*	NA*	0.61	NA*	--
Total	5.64	5.13	4.97	4.80	4.84	4.88	4.85	4.83	NA*	NA*	NA*	4.83	NA*	--
MARKETED PRODUCTION - NATURAL GAS (MCF/DAY)														
LA	485	412	408	427	432	446	441	421	399	398	400	427	420	-1.6%
COAL - LIGNITE PRODUCTION (Thousand Short Tons)	NR	NR	2254	2774	2892	694	689	652	264	324	225	2198	2154	-2.0%
MOTOR VEHICLE FUEL CONSUMPTION (Millions of Gallons) Gasoline														
LA	2142	1949	1824	1810	1985	503	498	496	170	185	138	1482	1487	0.3%

NA = Not Available From Source (Office of Conservation, Department of Natural Resources) As of 2/7/90
NR = Not Reported

Continued from front

using industries that provide such an important part of the foundation for the State's economic structure. Many firms in these industries face a backlog of longer term investment and modernization decisions that accumulated because uncertainty and risk aversion dominated the previous two decades.

Although this scenario, as well as factors discussed later, imply a relatively optimistic outlook for gas, there is nothing on the horizon which would reverse the well embedded trend of declining oil and gas production in the State. Given the importance of natural resource-based revenues in the State, this suggests that there will continue to be considerable interest in possibilities for extending the State's revenue base to offshore production and imports as well as in the effects and prudence of refinery taxation.

Trend Two: A cluster of serious environmental concerns about global warming, acid rain and clean air and water will determine the energy policy agenda of the 1990's.

Surveys of the public's concerns and aspirations regularly confirm the high priority they assign to environmental protection and restoration and their apparent willingness to pay for it. The conventional wisdom is that in the 1990's environmental considerations will dominate energy or economic concerns when there is trade off or conflict between them. As a consequence a new and tougher revision of the Clean Air Act is expected to survive the next session of the Congress as well as the Nation's first attempt to control acid rain.

Policies to deal with global warming remain in the academic symposium rather than serious legislative stage of development. A major problem facing policy-makers is that the cure as well as the disease truly global in character.

Clean air and acid rain legislation, on the other hand, are assumed to hit the big coal burning states of the Ohio and Tennessee Valleys hardest and to increase the demand for clean burning fuels like natural gas.

Coal has become increasingly important for Louisiana Utilities during the 1980's, but their plants are new and burn low sulfur coal, which makes it easier to meet new air quality standards. Air toxics and urban smog aspects of the clean air measures, however, may impact Louisiana's oil- and gas-using industries significantly. An industry supported study estimated compliance with air toxics controls would cost Louisiana industries $2.5 billion annually; the second highest in the nation. To provide a basis for comparison, last year the State spent about $2.7 billion on elementary, secondary and higher education combined. A study for EPA, however, estimated the cost of air toxics control would be only $5.0 billion nation wide.

Trend Three: Both the regulatory structure and the economic structure of the electric utility industry are expected to undergo fundamental changes.

The Federal Energy Regulatory Commission (FERC) has been aggressively trying to persuade the electric utility industry to become competitive through rule making as well as analysis and exhortation. Cogenerators and independent power producers (non-utility generators of electricity) are expected to be "a" if not "the" major source of new generating capacity in the 1990's. Both states and utilities are experimenting with auctioning systems whereby cogenerators, independent power producers, and even other utilities bid to supply new generating capacity needed by utility systems. Nation wide electricity growth is forecast to continue to grow at a rate of around 3 percent annually, and the conventional wisdom is that reserve margins will continue to shrink in many parts of the country. However, with the exception of Florida, the Gulf South still has surplus capacity and is expected to maintain that position well into the 1990's.

To date there appears to be less interest in these new regulatory and marketing innovations in Louisiana than elsewhere. Nevertheless, the State has many industries which use technology conducive to cogeneration and/or for whom the price and availability of electricity is important.

With more competition nationally, potential cogenerators or large electricity users may push for change in Louisiana. Moreover, the state is served by several different utility systems which makes a more competitive structure within the industry a more realistic possibility than if one system dominated. However, even if advocates of a more competitive electrical utility industry were successful, basic differences in technology mean that the changes would probably be less traumatic than those resulting from the transformation of the natural gas industry from one of the Nation's most heavily regulated to one of its most competitive.

NOTES

1. Oil and Gas Journal, December 25,1989, p. 25. This estimate is for the reference West Texas Intermediate oil..

2. Oil and Gas Journal, December 25, 1989, p. 22.

3. Clean Air Act Legislation: Cost Evaluation, Business Round Table. January, 1990.

Allan G. Pulsipher joined the Center for Energy Studies in October, 1989. He has served as the Chief Economist for the Tennessee Valley Authority, as a Program Officer for the Ford Foundation and as a Senior Staff Economist with the President's Council of Economic Advisers. He is a graduate of the University of Colorado and received his PhD from Tulane University.

Center for Energy Studies
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Louisiana State University
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Louisiana Energy Indicators

Center for Energy Studies

Louisiana State University Winter 1990

Independents Overtake Majors in Production

Robert Baumann
Executive Director
Center for Energy Studies
Louisiana State University

Louisiana's independent oil and gas producers were responsible for more hydrocarbon production in 1988 than the large integrated companies, or "majors." This was the first time this had happened since meaningful data have been available.

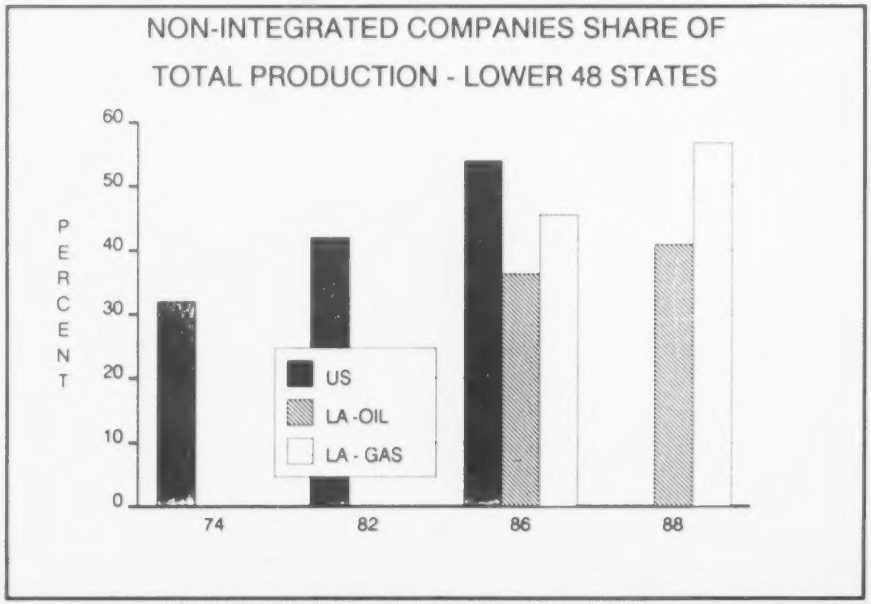
I. Trends

Independents produced about 56 percent of Louisiana's gas and 41 percent of its oil, as is shown in Figure One. If these volumes are weighted on an energy equivalent basis, independent producers are responsible for 50.7 percent of the hydrocarbons produced in Louisiana's tax jurisdiction in 1988. If the OCS production were included as a part of the Louisiana total, the picture would change since the majors dominate in the OCS province.

The increasing share of production by Louisiana's independents parallels national trends--although integrated companies maintain a larger share of production in Louisiana than the average for the lower 48 states. Alaska's production is dominated by the majors and is not included in the data used in the accompanying figure, which were derived by the Department of Energy's Research Advisory Board and the National Geoscience Institute. If Alaska were included the independents' share of total production would drop to 45 percent compared to the 54 percent level shown in the figure for 1986. The independents' share of Louisiana's production was 42.5 percent in the same year.

The growing share of production by independents reflects the increasing maturation of U.S. production. As existing fields mature and their production declines, and as the probability of finding new major fields onshore lessens, integrated companies find it profitable to sell their leases to independent operators who have lower overhead costs and are able to develop the reserves more profitably.

During the period of 1986 to 1988 the



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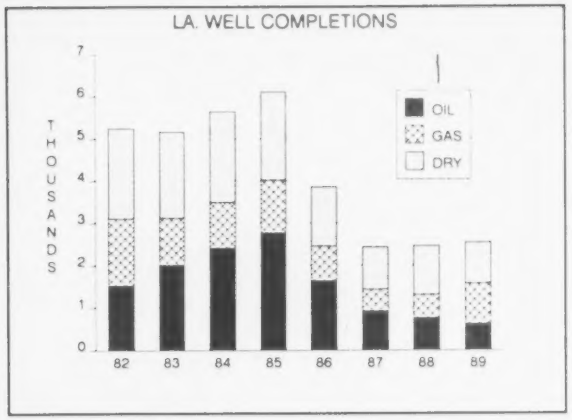
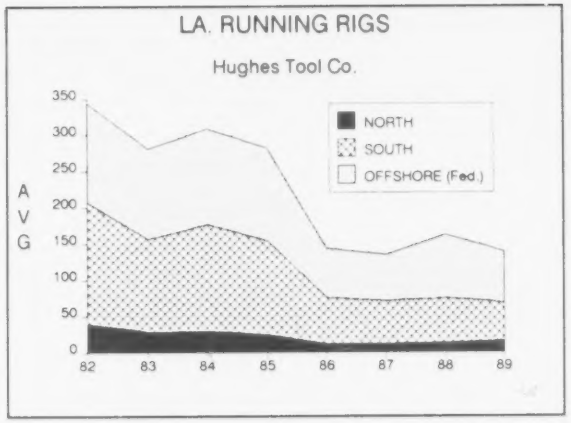
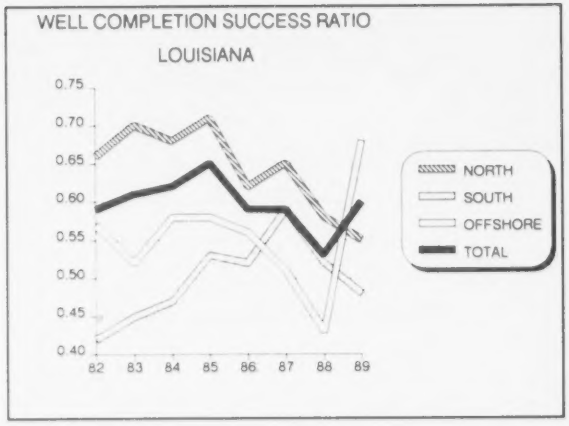
Drilling







Figures represent TOTAL
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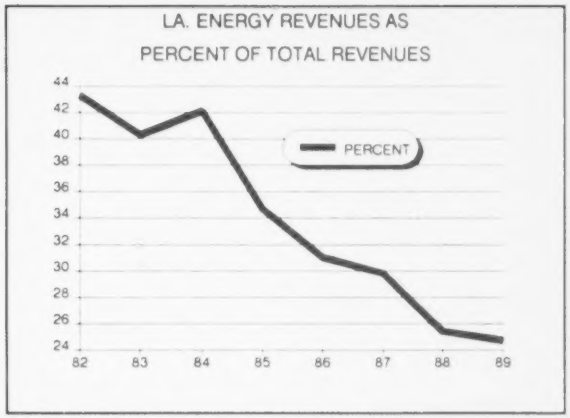
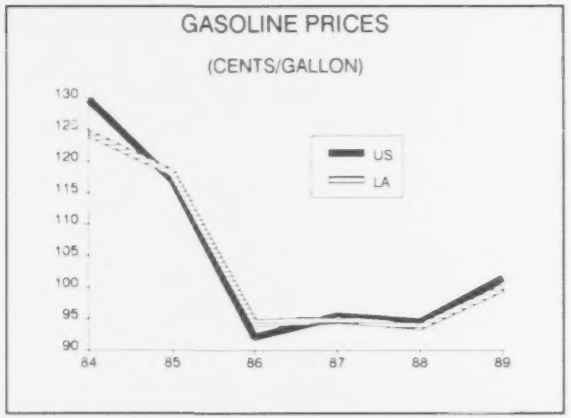
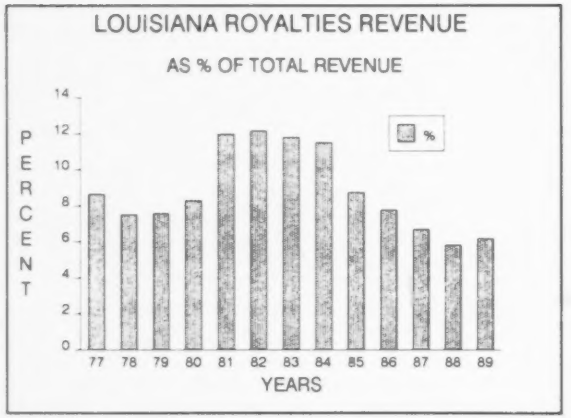
Indicator	1984	1985	1986	1987	1988	1989	89.1	89.2	89.3	Oct	Nov	Dec	Year to Date Through Last Month Reported Dec 1988	Year to Date Through Last Month Reported Dec 1989	% Change
OIL WELLS COMPLETED*															
North	1,792	2,139	1,092	426	333	190	59	38	33	14	10	36	333	190	-42.9%
South	389	420	349	321	233	105	25	25	27	10	8	10	233	105	-54.9%
Offshore	239	215	197	174	185	327	101	83	94	17	12	20	185	327	76.8%
Total	2,420	2,774	1,638	921	751	622	185	146	154	41	30	66	751	622	-17.2%
GAS WELLS COMPLETED*															
North	680	721	426	282	258	300	104	67	47	21	29	32	258	300	16.3%
South	190	281	214	113	133	139	51	29	26	11	12	10	133	139	4.5%
Offshore	204	243	172	122	165	510	63	97	139	54	43	114	165	510	209.1%
Total	1074	1245	812	517	556	949	218	193	212	86	84	156	556	949	70.7%
DRY WELLS COMPLETED*															
North	1195	1178	691	398	427	372	66	83	105	36	34	38	427	327	-23.4%
South	669	624	473	306	323	261	82	63	58	18	18	22	323	261	-19.2%
Offshore	293	296	259	302	409	357	172	52	59	24	21	29	409	357	-12.7%
Total	2157	2098	1423	1006	1159	990	320	198	222	78	73	99	1159	990	-14.6%
RUNNING RIGS (Avg. Hughes Tool)															
North	30	25	12	12	14	16	13	16	16	20	19	22	14	16	14.3%
South	147	129	63	59	61	52	50	53	47	53	57	65	62	52	-16.1%
Offshore (Incl. fed. water)	132	129	69	65	88	72	69	64	76	71	80	80	88	72	-18.2%
Total	310	283	143	135	164	140	132	133	138	144	155	167	164	140	-14.6%

*Source: Petroleum Information Corporation. CES maintains additional data in the Indicators Database.

Employment, Prices & Revenues







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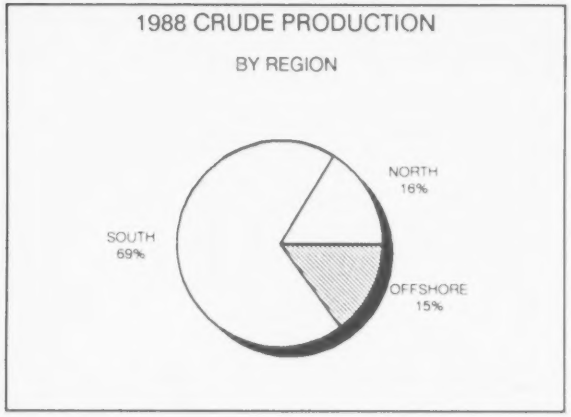
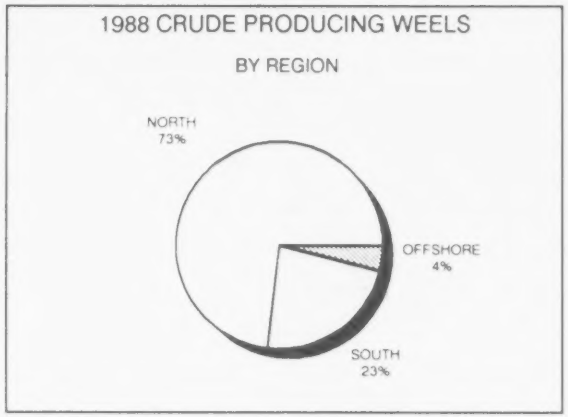
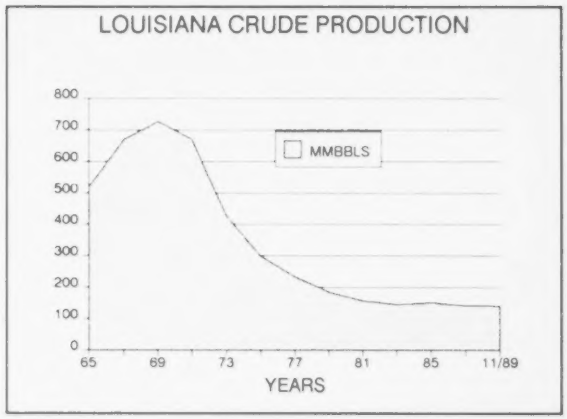
Indicator	1984	1985	1986	1987	1988	1989	89.1	89.2	89.3	Oct	Nov	Dec	Year to Date Through Last Month Reported Dec 1988	Year to Date Through Last Month Reported Dec 1989	% Change
EMPLOYMENT (Thousands) - Avg.															
Oil & Gas Extraction (SIC13)	75.6	77.1	61.9	55.4	54.0	54.0	53.1	54.4	54.5	54.7	54.7	52.9	54.0	54.0	0.0%
Chemicals & Allied Products (SIC28)	28.9	28.0	26.1	25.3	26.8	27.8	27.8	27.5	27.9	27.8	28.0	28.5	26.8	27.8	3.7%
Petroleum Refining (SIC29)	11.6	11.1	11.5	11.5	10.3	10.3	10.4	10.2	10.3	10.2	10.2	10.7	10.3	10.3	0.0%
Total La. Employment	1751.9	1744.2	1727.3	1726.7	1712.0	1742.5	1685.0	1732.3	1765.1	1802.7	1801.2	1758.3	1712.0	1742.5	1.8%
GASOLINE PRICES (cents/gal)															
US	120.69	116.86	92.06	95.40	94.46	101.43	94.45	107.05	103.54	101.53	100.17	100.37	94.46	101.43	7.4%
LA	124.33	118.08	94.33	94.82	93.75	99.88	96.13	104.90	100.03	98.80	97.50	99.10	93.75	99.88	6.5%
OIL PRICES ($/BBL)															
Spot (Avg. End of Week)															
W. Texas Int. - Cushing	29.33	27.87	13.39	19.03	15.98	19.61	18.47	20.18	19.10	19.95	20.30	21.80	15.98	19.61	22.7%
Louisiana - St. James	29.64	28.42	13.49	19.38	16.13	19.75	18.87	20.02	18.87	20.53	20.75	22.42	16.13	19.75	22.4%
PRINCIPAL ENERGY RELATED REVENUES (Millions $)															
Sev. - Oil & Condensate	653.5	598.3	390.3	345.6	300.0	314.5	80.3	78.3	82.2	20.5	21.7	31.5	300.0	314.4	4.8%
Sev. - Natural Gas	131.3	121.1	126.1	112.7	106.4	109.4	31.9	26.7	26.9	7.6	7.4	8.8	106.4	109.4	2.8%
Bonuses	68.0	32.1	15.9	25.5	17.7	12.1	2.2	4.3	2.4	0.7	2.3	0.3	17.7	12.1	-31.6%
Rentals	21.2	20.9	12.3	6.7	9.3	8.5	1.9	1.6	2.9	0.5	0.8	0.8	9.3	8.5	-8.6%
Royalties	436.1	379.1	304.5	253.8	243.2	275.8	52.2	59.2	108.3	18.9	18.8	18.3	243.2	275.8	13.4%
Special Fuels Tax	41.1	52.3	57.6	55.2	58.0	58.5	13.8	14.8	15.4	5.5	4.8	4.2	58.0	58.5	0.9%
Gasoline Tax	227.7	286.2	289.5	311.6	314.7	308.0	76.0	80.2	79.2	21.1	27.2	24.2	314.7	308.0	-2.1%
Nat. Gas Franchise Tax	11.7	11.0	10.9	9.3	9.7	9.0	2.4	2.5	2.2	0.5	1.4	0.2	9.7	9.0	-7.2%
Total Energy Revenues	1592.6	1502.9	1211.6	1126.4	1062.6	1100.8	261.8	268.6	320.7	76.0	85.0	89.2	1062.8	1100.8	3.6%
TOTAL STATE REVENUES (Millions $)	3785.2	4335.6	3913.2	3783.6	4181.8	4457.9	983.4	1312.0	1487.5	383.9	321.1	353.9	4181.8	4457.9	6.6%
ENERGY RELATED REVENUES AS % OF STATE TOTAL	42.1	34.7	31.0	29.8	25.4	24.7	26.6	20.5	21.6	19.8	26.5	25.2	25.4	24.7	-2.8%

Historical Presentation - Annual







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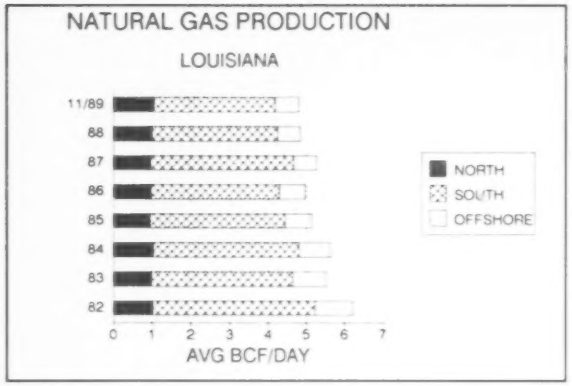
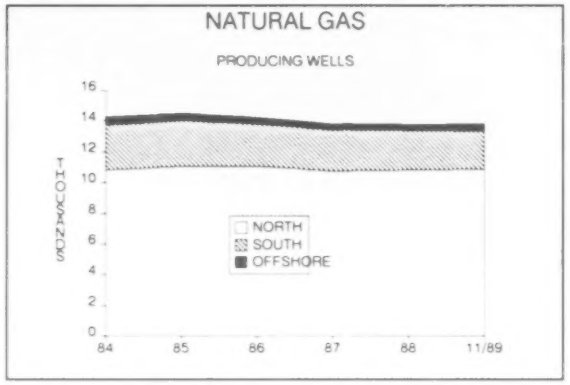
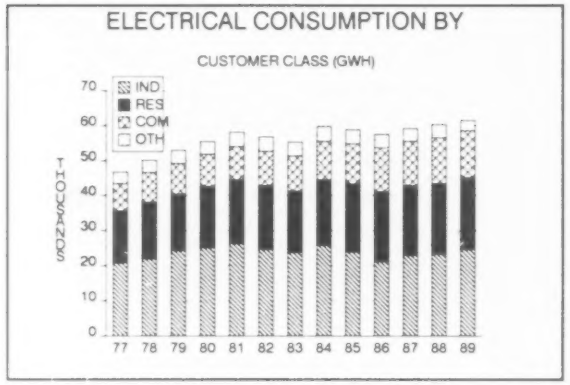
Indicator	66	67	68	69	70	71	72	73	74	75	76	77
CRUDE OIL PRODUCTION												
Lease Condensate & C.T.C Included												
(MBBLS)												
North	58846	59490	55653	52702	51820	50112	48181	42898	41466	39648	40268	38863
South	380230	429259	439216	431162	448573	441584	403892	357834	301048	258166	232625	209607
Offshore	243245	288034	330026	365667	284878	280176	120352	108108	89123	40985	38358	33805
Total	682321	776783	824895	849531	785271	771872	572425	508840	431637	338799	311251	282275
CRUDE OIL PRODUCING WELLS												
North	14259	13803	13780	13648	12990	12841	12297	11862	11955	12445	12564	13084
South	12187	12096	11653	10818	10040	9228	8519	8116	8248	7883	7595	7431
Offshore	4617	4771	4833	4927	3311	2922	1585	1578	1515	1050	1065	1061
Total	31063	30670	30266	29393	26341	24991	22401	21556	21718	21378	21224	21576

Indicator	78	79	80	81	82	83	84	85	86	87	88	89
CRUDE OIL PRODUCTION												
Lease Condensate & C.T.C Included												
(MBBLS)												
North	36990	33328	33289	36302	36528	34105	33367	31972	29731	28001	26956	NA
South	188555	165840	151563	138594	128910	121461	127542	127814	123583	119737	113834	NA
Offshore	32366	29360	27592	26273	24941	24803	27036	25561	26440	24294	24596	NA
Total	257911	228528	212444	201169	190379	180369	187945	185347	179754	172032	165386	NA
CRUDE OIL PRODUCING WELLS												
North	12974	13445	14495	15514	15350	16406	18299	19093	18995	18371	17759	NA
South	6982	6797	6795	6644	6476	6255	6292	6242	6831	5855	5569	NA
Offshore	1093	1074	1064	1128	1061	1033	967	1019	978	987	950	NA
Total	21049	21316	22354	23286	22887	23694	25558	26354	26804	25213	24278	NA
Other												
Total												

Production & Consumption







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Indicator	1984	1985	1986	1987	1988	1989	89.1	89.2	89.3	Oct	Nov	Dec	Year to Date Through Last Month Reported Dec 1988	Year to Date Through Last Month Reported Dec 1989	% Change
NATURAL GAS PRODUCING WELLS															
North	10812	11026	11049	10726	10813	NA	11023	10889	10840	10511	10748	NA	10813	NA	---
South	2955	2976	2747	2670	2539	NA	2521	2494	2428	2418	2441	NA	2539	NA	---
Offshore	532	511	438	413	445	NA	480	493	511	513	521	NA	445	NA	---
Total	14299	14513	14185	13809	13796	NA	14023	13876	13779	13442	13710	NA	13796	NA	---
NATURAL GAS PRODUCTION - Casinghead Included (Avg. BCF/day)															
North	1.05	0.96	0.99	0.97	1.02	NA	1.07	1.05	1.00	0.93	1.07	NA	1.02	NA	---
South	3.76	3.48	3.36	3.68	3.23	NA	3.24	3.15	3.04	3.04	3.11	NA	3.23	NA	---
Offshore	0.83	0.70	0.68	0.61	0.59	NA	0.53	0.56	0.59	0.59	0.62	NA	0.59	NA	---
Total	5.64	5.13	4.97	4.81	4.84	NA	4.85	4.76	4.64	4.56	4.80	NA	4.84	NA	---
ELECTRICITY PRODUCTION (GWh)															
Gas Generated	29360	27735	26035	23823	24286	21899	3636	6238	7353	2010	1391	1271	24286	21899	-9.8%
Coal Generated	9830	13968	15587	15101	18429	18083	4299	4968	5171	1324	1120	1201	18429	18083	-1.9%
Oil Generated	140	100	419	60	269	262	29	16	16	34	5	162	269	262	-2.6%
Nuclear Generated	0	2458	10638	12324	13788	12391	3373	2429	3799	632	813	1345	13788	12391	-10.1%
Total Generated	39330	44261	52679	51308	56770	52671	11373	13650	16338	4000	3330	3980	56770	52671	-7.2%
ELECTRICITY CONSUMPTION (GWh)															
Residential	18550	19176	19865	19802	19916	20358	4191	4816	7021	1541	1231	1550	19916	20350	2.2%
Commercial	10941	11576	12533	12650	13062	13324	2947	3338	3884	1120	1008	1027	13062	13324	2.0%
Industrial	25900	24067	21202	23064	23467	24722	6039	6144	6366	2162	2068	1943	23467	24722	5.3%
Other	4247	3993	3899	3610	3860	3157	716	834	913	232	231	231	3860	3157	-18.2%
Total	59638	58812	57499	59126	60305	61553	13893	15132	18184	5055	4538	4751	60305	61553	2.1%

NA = Not Available From Source (Office of Conservation, Department of Natural Resources) As of 5/14/90

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transfer of reserves from majors to independents accelerated significantly and the independents share of production rose from 42.5 percent to 50.7 percent.

II. Policy Implications

The decline of domestic hydrocarbon production combined with the shift of development from majors to independents threatens the industry's intellectual infrastructure. The industry's research and development base was largely created and is maintained by the large integrated companies. At the very time when more efficient and cost-effective technology is required to develop our remaining domestic reserves, the focus of the industry's R&D base is, understandably, shifting to other areas of the world where the majors are most active in exploration and development.

Texas has recognized this problem and responded to it by building up its applied research and development capability at state universities in cooperation with the Texas oil and gas industry. Proposals to extend such activities to other states have been submitted at the national level but have not yet been approved.

The University of Kansas has organized a very successful technology transfer program focused on tertiary oil recovery. Working closely with an advisory council of independent operators and consultants, the Kansas program has been able to leverage a modest amount of state funding to help implement a number of tertiary recovery projects. This not only helps Kansas' independents, but by extending the life and increasing the recovery rate from maturing fields, helps maintain the state's energy revenue base at the same time.

Although universities are eager to respond to these new needs, it will require some changes in traditional attitudes and ways of doing business. Universities will have to be willing to target research efforts on clearly focused problems and commit additional resources to academic units which currently have very low enrollments by historical standards; for example, petroleum engineering, geology, and geophysics. Moreover, universities will have to learn how to transfer the technology they develop to a nonacademic community of users, as well as to change their own internal reward system so that it encourages applied research and successful technology transfer.

Similarly, oil and gas agencies at the state level increasingly may feel pressure to perform new services as well as represent state interests more aggressively. New Mexico is already doing this by creating a program to help its gas operators overcome marketing problems. Recognizing that local rate determination proceedings have a direct impact back to the well head price, and ,therefore, directly to the state's own coffers via lower severance tax collections and royalty payments, New Mexico sends state employees to testify at out-of-state public utility commission hearings to set natural gas rates.

A considerable amount of the decline in well head prices for natural gas over the past few years does not seem to be reflected in the prices consumers pay. There are many complex well head to burner tip issues which have a direct impact on state revenues as well as the viability of the state's producers. Unlike the large integrated companies, independent producers do not have the resources or experience to intervene effectively in the individual cases where these issues are resolved.

A final factor which argues for a more active role for the state is that the independent producers depend on wellhead revenues for almost all of their cash flow, while integrated producers usually have downstream refining and marketing operations. While margins for oil have improved in recent months, natural gas margins remain very thin. Because Louisiana produces nearly twice as much gas as oil on an energy equivalent basis, the recovery of its energy sector is lagging many other producing states.

Issues which affect the wellhead price have a direct and immediate effect not only on the state's revenues but the economic survival of many of its independent producers.

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